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## TECHNICAL NOTES

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ALASKA FOREST RESEARCH CENTER

MOORE MOUNTAIN STATION

U. S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE

JUNEAU, ALASKA

No. 33

### The Problem of Brush Control on Cutover Areas in Southeast Alaska

Brush, principally salmonberry, black currant, and devils club, may invade cut-over areas in Southeast Alaska and retard or reduce stocking by desirable tree species. Brush competition is particularly pronounced on well-drained alluvial soils which also are the most productive soils for tree growth. Since large-scale logging in this region is just beginning, such brush areas are not yet extensive. The problem, however, is very likely to become more acute.

Earlier experiments conducted by the Alaska Forest Research Center on brush control along trails indicated that spraying with a solution of one-half pound of ammonium sulfamate per gallon of water gave effective control of most common brush species.<sup>1/</sup> Treatment with chemicals thus appeared to offer a means of brush control on problem areas.

In 1954, chemical control tests were conducted on a 12-year-old cutover area where very dense salmonberry brush grew 6 to 8 feet tall on deep well-drained alluvial soils. Stocking to conifers was patchy, and the seedlings were severely retarded. Seedlings of western hemlock and Sitka spruce were confined to hummocks around stumps and roots of windfalls, or on rotten logs and stumps. Even in such locations regeneration was badly suppressed.

All brush species do not appear to retard conifer establishment and growth as a small ridge covered by blueberry brush was well stocked with thrifty spruce and hemlock seedlings.

Three plots in each of two blocks were sprayed with ammonium sulfamate using back-pack pressure-type sprayers on June 24 after the current year's leaves had developed. Treatment was confined mainly to foliage because of the difficulty of reaching the base of stems. Foliage was thoroughly wetted by the spray which was applied at a rate of about one gallon per 400 square feet; equivalent to approximately 108 gallons of spray or 54 pounds of ammonium sulfamate crystals per acre. A number of spruce and hemlock seedlings were staked and half of these given a direct spraying. The remainder received a light, indirect treatment by drifting spray.

Within one month nearly all leaves of the brush species had withered and dropped. Hemlock seedlings proved very susceptible to the poison solution and mortality was high. Sitka spruce seemed less susceptible and was not killed unless given a direct spray. New growth was affected by light spraying in some

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<sup>1/</sup> Zach, L. W. Chemical brush control. Tech. Note No. 8, Alaska Forest Research Center, 2 pp., 1951.

cases. Current leader growth, which was not completed at time of treatment, and small conifer seedlings were especially susceptible. Examinations in 1955 revealed considerable resprouting of salmonberry and black currant.

Spraying, including mixing the solution, and transporting water, poison and equipment, required 34 man-hours per acre. Approximately 54 pounds of ammonium sulfamate powder per acre were used. The costs on a per-acre basis were as follows:

54 pounds ammonium sulfamate	
@ \$23.44 per 100 wt. f.o.b. Ketchikan	\$12.66
34 hours labor	
@ \$2.00 per hour	<u>68.00</u>
	\$80.66

The largest item of cost is labor. These costs are too high to permit large-scale chemical brush control in Southeast Alaska. Limited tests will be conducted to determine if other chemical herbicides may prove more effective. In some cases chemicals may be useful in spot treatment of areas supporting heavy brush. The mountainous terrain, the limited size and discontinuous nature of the brush areas make aerial spraying impractical.

In view of the resprouting and the high cost of treating brush in this region, it appears that other means of brush control should be explored. Since there are no extensive brush areas at present, the emphasis should be on measures designed to prevent brush development. Studies will be directed at developing special logging practices which will uproot or retard brush development. Prompt establishment of desirable conifers immediately following logging would greatly reduce the brush hazard. Direct seeding studies will be made in 1956 on potential brush areas.

July 1956

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